



# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

---

## MBA PROFESSIONAL REPORT

---

## OFFICE OF THE SECRETARY OF DEFENSE RETIREMENT OPTIONS

---

By: **Robert Turner**

**September 2014**

**Advisors:** William Gates,  
Amilcar Menichini

*Approved for public release; distribution is unlimited*

THIS PAGE INTENTIONALLY LEFT BLANK

**REPORT DOCUMENTATION PAGE**
*Form Approved OMB No. 0704-0188*

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.

<b>1. AGENCY USE ONLY (Leave blank)</b>	<b>2. REPORT DATE</b> September 2014	<b>3. REPORT TYPE AND DATES COVERED</b> MBA Professional Report
<b>4. TITLE AND SUBTITLE</b> OFFICE OF THE SECRETARY OF DEFENSE RETIREMENT OPTIONS		<b>5. FUNDING NUMBERS</b>
<b>6. AUTHOR(S)</b> Robert Turner		
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Naval Postgraduate School Monterey, CA 93943-5000		<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>
<b>9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> N/A		<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>
<b>11. SUPPLEMENTARY NOTES</b> The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number <u>N/A</u> .		
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited		<b>12b. DISTRIBUTION CODE</b>

**13. ABSTRACT (maximum 200 words)**

This study analyzes whether the retirement reform proposal of the Office of the Secretary of Defense (OSD) provides more or less value for service members than the current retirement system. With the increase of government spending and discretionary government spending suffering heavy cuts, exploring ways to reduce government spending has become increasingly important. The single highest entity of discretionary spending is the allocation of military funds, and military compensation is a significant element of the military budget.

The present value formula was used to determine the value added by OSD's retirement reform proposal and the current retirement system. Factoring the concept of time value of money, OSD's proposal increases the service members' value of the retirement benefit. Next, comparisons were made to find the promotion and retention incentives associated with OSD's proposal and the impact on service members. When comparing an O-5 and O-6, the opportunity cost of not making the higher rank of O-6 can be significant. The data also show the limited incentives for service members to progress in their career or continue service at the same rank when close to retirement.

<b>14. SUBJECT TERMS</b> OSD retirement Policy		<b>15. NUMBER OF PAGES</b> 49	
<b>16. PRICE CODE</b>			
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> UU

NSN 7540-01-280-5500

 Standard Form 298 (Rev. 2-89)  
 Prescribed by ANSI Std. Z39-18

THIS PAGE INTENTIONALLY LEFT BLANK

**Approved for public release; distribution is unlimited**

**OFFICE OF THE SECRETARY OF DEFENSE RETIREMENT OPTIONS**

Robert Turner, Lieutenant, United States Navy

Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL**  
**September 2014**

Author: Robert Turner

Approved by: William R. Gates

Amilcar Menichini

William R. Gates, Dean  
Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

# **OFFICE OF THE SECRETARY OF DEFENSE RETIREMENT OPTIONS**

## **ABSTRACT**

This study analyzes whether the retirement reform proposal of the Office of the Secretary of Defense (OSD) provides more or less value for service members than the current retirement system. With the increase of government spending and discretionary government spending suffering heavy cuts, exploring ways to reduce government spending has become increasingly important. The single highest entity of discretionary spending is the allocation of military funds, and military compensation is a significant element of the military budget.

The present value formula was used to determine the value added by OSD's retirement reform proposal and the current retirement system. Factoring the concept of time value of money, OSD's proposal increases the service members' value of the retirement benefit. Next, comparisons were made to find the promotion and retention incentives associated with OSD's proposal and the impact on service members. When comparing an O-5 and O-6, the opportunity cost of not making the higher rank of O-6 can be significant. The data also show the limited incentives for service members to progress in their career or continue service at the same rank when close to retirement.

THIS PAGE INTENTIONALLY LEFT BLANK

## TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	BACKGROUND .....	1
B.	PURPOSE.....	2
C.	RESEARCH QUESTIONS .....	2
D.	SCOPE AND LIMITATIONS .....	2
E.	METHODOLOGY .....	3
F.	ORGANIZATION OF THE RESEARCH.....	3
II.	SIGNIFICANT IMPLEMENTATION AND CURRENT MILITARY COMPENSATION .....	5
A.	MILITARY COMPENSATION.....	5
B.	PURPOSE OF MILITARY RETIREMENT .....	6
C.	HISTORY OF RETIREMENT POLICIES .....	7
D.	CURRENT RETIREMENT POLICY .....	8
1.	Final Pay Plan .....	8
2.	High-3 Plan .....	8
3.	REDUX (Military Retirement Reform Act of 1986).....	9
E.	OFFICE OF THE SECRETARY OF DEFENSE TENTH QUADRENNIAL REVIEW OF MILITARY COMPENSATION POLICY .....	10
1.	Defined Benefit Plan .....	10
2.	Defined Contribution Plan .....	11
3.	Gate Pay .....	11
4.	Separation Pay .....	11
F.	SUMMARY .....	11
III.	MODEL DESCRIPTION.....	13
A.	MILITARY PAY CHART .....	13
B.	HIGH-3 PAYOUT TABLE.....	14
C.	OUTPUT INFORMATION .....	15
D.	EXPECTED ANNUITY .....	16
E.	PRESENT VALUE .....	16
F.	ASSUMPTIONS.....	17
IV.	ANALYSIS AND RESULTS .....	19
A.	INTRODUCTION.....	19
B.	OSD VERSUS HIGH-3 (CURRENT).....	19
C.	PROPOSAL COMPARISONS.....	21
D.	SAME RANK WITH DIFFERENT YOS.....	22
E.	DIFFERENT RANKS WITH SAME YOS .....	23
F.	INCENTIVES FOR LONGER COMMISSIONS.....	25
G.	SUMMARY .....	25

V.	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS .....	27
A.	SUMMARY .....	27
B.	CONCLUSION .....	27
C.	RECOMMENDATIONS.....	28
	LIST OF REFERENCES.....	29
	INITIAL DISTRIBUTION LIST .....	31

## **LIST OF FIGURES**

Figure 1.	Income Percentile for Military Personnel with Similar Age and Education (from Hosek, Asch, and Mattock, 2012, p. 33).....	6
Figure 2.	Separation Pay Formula .....	21

THIS PAGE INTENTIONALLY LEFT BLANK

## LIST OF TABLES

Table 1.	Chart Multiplier Comparison .....	10
Table 2.	Pay Chart (from Defense Finance and Accounting Service, n.d.) .....	14
Table 3.	High-3 Payout Table .....	15
Table 4.	High-3 Applicable Payout Table .....	16
Table 5.	Expected Annuity Table .....	16
Table 6.	Present Value Table .....	17
Table 7.	Consolidated Output .....	17
Table 8.	Present Value Inputs (OSD).....	19
Table 9.	Annual Income.....	20
Table 10.	Present Value Inputs (Current) .....	20
Table 11.	PV Comparison, O-5 at 20 YOS.....	20
Table 12.	Comparison Chart of OSD and Current Retirement System .....	22
Table 13.	Difference in YOS Compared to Similar Rank .....	23
Table 14.	Rank difference with 34 YOS (OSD) .....	24
Table 15.	Rank difference with 28 YOS.....	24
Table 16.	Percentage Changes in Opportunity Cost .....	25

THIS PAGE INTENTIONALLY LEFT BLANK

## **LIST OF ACRONYMS AND ABBREVIATIONS**

CBO	Congressional Budget Office
COLA	Cost of Living Adjustments
DBB	Defense Business Board
DOD	Department Of Defense
MMRA	Military Retirement Reform Act
OSD	Office of the Secretary of Defense
PV	present value
QRMC	Quadrennial Review of Military Compensation
REDUX	Military Retirement Reform Act of 1986
RMC	Regular Military Compensation
YOS	years of service

THIS PAGE INTENTIONALLY LEFT BLANK

## **ACKNOWLEDGMENTS**

I would like to thank my advisors, Dean William Gates and Professor Amilcar Menichini, for sharing their knowledge, expertise, and insights, which made this thesis possible. Their advice and guidance was vital during my research and analysis. Additionally, I would like to thank Professor Michael Dixon and Cardy Moten for their guidance and advice. Finally, I owe a special thanks to my wife, Nikki, for the many ways she has supported me and my work throughout the entire process.

THIS PAGE INTENTIONALLY LEFT BLANK

## I. INTRODUCTION

### A. BACKGROUND

The government has increased mandatory spending significantly. The growth in the overall mandatory spending allocation is the reason spending has risen in past years. With trillion dollar federal deficits accrued from 2009–2012, and a 680 billion deficit in 2013, discretionary spending has suffered significant cuts (Congressional Budget Office (CBO), 2007). The Office of the Secretary of Defense (OSD) is aware that the military will continue to face cuts and has been looking for ways to revamp military retirement benefits. According to the 2011 Defense Business Board (DBB) report, the current military system is “unsustainable” (Defense Business Board Task Group, 2011, p. 5). One of the government’s focuses has been the OSD proposal, given in the Tenth Quadrennial Review of Military Compensation (QMRC).

The Tenth QMRC proposal involves defined benefits, contribution plan, gate pay and separation pay. These are further explained:

- **A defined benefit plan** provides retirement pay equal to a 2.5 percent multiplier of the High-3. The benefit would be payable at age 57.
- **A defined contribution plan** under which DOD (Department Of Defense) would annually contribute up to 5 percent of basic pay.
- **Gate pay** is a continuation payment payable at specified year-of-service milestones.
- **Separation pay** is provided to members when they leave the military (Office of the Under Secretary of Defense, Personnel and Readiness [USD (P&R)], 2008).

In 2012, Naval Postgraduate School was tasked to study alternatives developed by Office of the Secretary of Defense (OSD), showing that this issue is relevant to current times. With 83 percent of service members not reaching the 20-year minimum requirement for retirement, cutting cost and exploring multiple options to provide service members with retirement is a pertinent issue (Defense Business Board Task Group, 2011,

p. 26). This thesis will examine how variations in years of service (YOS) and rank, based on the Tenth QMRC proposal, can impact service members financially.

## **B. PURPOSE**

The purpose of this thesis is to model variations in present values (PVs) for service members ranks O–5 to O–10 when implementing OSD’s proposal and comparing the plan with the current military retiree program. The model variables are YOS and rank, and they will show the impact they have in respect to PV. After assessing the best retirement option, further investigation of incentives for retention and promotion will be explored.

## **C. RESEARCH QUESTIONS**

The primary question that this thesis addresses: **Which retirement policy provides more benefit for service members, OSD’s proposal or the current retirement policy?**

The following secondary questions will be addressed:

- How monetarily significant is the retirement policy for service members with the same rank but different YOS?
- How monetarily significant is the retirement policy for service members with the different rank but the same YOS?
- Are there any monetary incentives for service members to remain commissioned for an extended period?

## **D. SCOPE AND LIMITATIONS**

OSD’s proposal provided the options for the simulation model, and choices were based on these options. The officer community was chosen because it was the highest paid category, and it allowed for a base case. Life expectancy was based on male officers, since the majority of officers are male. Data for life expectancies were extrapolated from the DOD Office of the Actuary Life Expectancy Rate. This rate was used to calculate the length of annuity payments based on expected year of death.

Results are limited to an aggregated perspective of service members in the male officer community. The assumption is that all changes in this model would have a similar effect on the military as a whole. Assumptions were also made that with the transition to a smaller force being our nation focus; DOD retention issues will average into a normal curve over time.

#### **E. METHODOLOGY**

Methodology for this research is to calculate the PV with variation in YOS and rank based on the 2008 OSD military retirement plan proposal. The model assumes that an officer is following the generic career progression. The discount rate was arbitrarily selected based on empirical data ranges of 10 to 15 percent. The rate will remain static. This adds assurance that the component will not affect possible PV values unless changed.

#### **F. ORGANIZATION OF THE RESEARCH**

Chapter II addresses the U.S. military compensation, purpose of the retirement system, history of retirement policies, the current system, and the OSD proposal.

Chapter III gives a model description and discusses methodology and implementation of methods. This chapter will provide a more in-depth description of the PV and the assumptions made to construct the model.

Chapter IV analyzes how the variations within the military retirement policy impacts incentives for service members. This chapter dives into the results of the analytical approach taken to answer primary and secondary questions.

Chapter V makes conclusions and recommendations based on analyses of output from the model.

THIS PAGE INTENTIONALLY LEFT BLANK

## II. SIGNIFICANT IMPLEMENTATION AND CURRENT MILITARY COMPENSATION

### A. MILITARY COMPENSATION

Before diving into current options and possible variations of the military retirement program, understanding the military compensation system is vital. The military compensation system is a mix of non-cash incentives, cash payments, and retirement benefits. The six major components of military compensation are:

- **Basic Pay:** Based on rank and service, taxable wage disbursed to all service members
- **Allowances:** Nontaxable income, disbursed in the form of food and housing
- **Special Pay/Bonus:** Compensation for difficult or dangerous duty, taxable income
- **Tax advantages:** Tax advantage options available in certain regions are tax exempt; certain residencies allow for more advantageous tax options; and there are multiple military services associated with tax advantages
- **Non-cash Benefits:** Miscellaneous benefits (i.e., Commissary, fuel stations, health care)
- **Retirement Benefits:** Retirement compensation in the current retirement system is a defined-benefit plan after a minimum of 20 years of service (Defense Business Board Task Group, 2011, p. 29).

The Regular Military Compensation (RMC) calculator adds up basic pay, allowances, and tax saving options to provide annual income in comparison with the civilian sector. In 2000, based on the RMC, the military was placed in the upper 70 percentile of civilian pay in comparison to age and education level (Hosek, Asch, & Mattock, 2012, p. 34). The chart in Figure 1 shows the constant rise in pay percentile based on age and education from 2000–2009. With the rise in pay percentile, the military pay is no longer below its civilian counterparts but is comparable to the civilian sector.

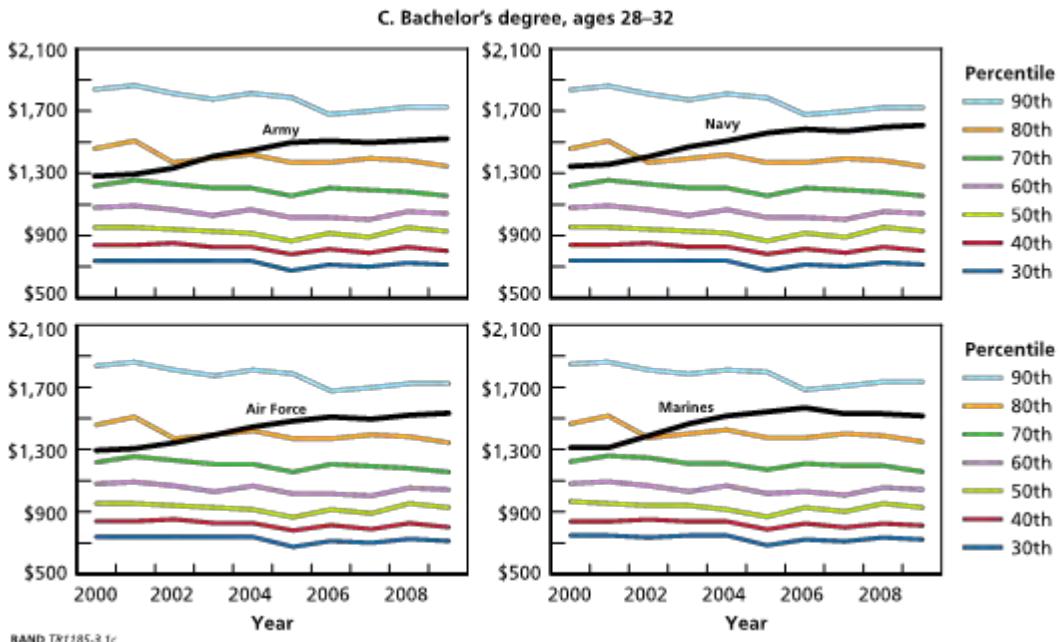


Figure 1. Income Percentile for Military Personnel with Similar Age and Education (from Hosek, Asch, and Mattock, 2012, p. 33)

## B. PURPOSE OF MILITARY RETIREMENT

The two main purposes of the military retirement system are to provide adequate military compensation after service and incentives for military members to retire. The compensation focus is to entice, retain, and inspire all service members to continue to strive for professional progression. To maintain proficient armed forces, the government prefers that service members willingly retire. This allows the following personnel to add their values to their perspective services. After an optimal time for service has been served, the following quote shows the importance of retirement:

A sound retirement system is essential to solving the superannuation problem. The services must be kept young, vigorous, and efficient: a sound retirement plan with a proper compulsory retirement age will permit youth and brains to rise to the top in time to be effective.... Other concepts of retirement for those taking up the profession of arms are also important and have been taken into consideration but the Commission does not consider them to be controlling. (Advisory Commission on Service Pay, 1948, p. 40)

## C. HISTORY OF RETIREMENT POLICIES

Understanding the history of the military retirement system will help the reader understand why the system was created and how it has changed. It will also help discover the focus of the current program. The birth of military pension can be found as early at 1636 in the war between the Pilgrims of Plymouth Colony and Pequot Indians (Glasson, 1900, p. 12). The law of the land stated that any soldier maimed during the war would be compensated by the colony for the rest of his life (Glasson, 1900, p. 13). By 1776, this same concept was written into law shortly after Declaration of Independence: Fifty percent pay would be allotted to all disabled service members (Glasson, 1900, p. 12).

There were several legislative acts that have shaped our current system. Addressing those that created an impetus in changing our current military retirement program is the primary focus. By understanding the impact these acts had, the reader is able to gain insight on challenges for the future as well as recommendations to move forward.

- **The Current System of Vesting:** In 1946, the 20 YOS marks for Navy and Marine Corps officers were established. In 1948, this was established for officers of the Army and Air Force (Christian, 2006, p. 22).
- **National Defense Authorization Act of 1981:** This Act terminated the old system where service members received retirement annuity based on final pay. It was replaced by the current High-3 method. This method takes the average of the service member's highest three years of service to calculate retirement annuity. The pay is then multiplied by the multiplier of 2.5 percent accrued for 20+ years of service (Christian, 2006, p. 20).
- **Military Retirement Reform Act of 1986:** On July 31, 1986, Congress passed the Military Retirement Reform Act (MRRA), commonly referred to as the “REDUX.” It used the 5th QRMC’s recommendation and adjusted the multiplier from 2.5 to 2.0 percent. The concept is to offer 40 percent of annuity at the 20-year mark, with an increase in the multiplier to 3.5 percent after year 20 and a \$30,000 bonus at the 15-year mark. Cost of Living Adjustments were also targeted in this plan (COLA) (Christian, 2006, p. 21).

## **D. CURRENT RETIREMENT POLICY**

There are two distinct military retirement plans in effect: non-disability and disability retirement pay. They are highly correlated, but the focus of this thesis is to address non-disability pension options. The three non-disability retirement plans that will be discussed are: Final Pay, High-3, and the Military Retirement Reform Act of 1986 (REDUX). Every plan is calculated by a 20-year vesting period and has the same payout formula: (Retired Pay Base \* Multiplier percent).

### **1. Final Pay Plan**

Final Pay Plan is the retirement payment formula for service members who entered the service before September 8, 1980(USD [P&R], n.d.a). This plan is only applicable for service members who have 34+ YOS. Naturally, over time the percentage of applicable members diminishes. Each year of service is worth 2.5 percent towards the multiplier, but the retired base pay is factored on the final year of service pay. Again, with a diminishing group in this category, this thesis will not address this option as a viable threat to any possible changes in the future.

### **2. High-3 Plan**

All service members entering the service after September 8, 1980, fall under the High-3 Plan (USD [P&R], n.d.a). The difference between the two policies is that instead of taking the final month of base pay as the retired base, it is now a mathematical average of the final three years of service. Since the last year is usually the highest income point, by taking the average it reduced the overall compensation given to service members.

Under High-3, as well as the Final Pay Plan, retirement pay is protected from inflation by annual Cost of Living Adjustments (COLAs) (USD [P&R], n.d.b). The Consumer Price Index, as measured by the Department of Labor, is used to determine the annual COLA changes. The annual COLA is equal to the percentage increase in the CPI for each year. This is a different index than what is used for active duty annual pay raises. Those are based upon average civilian wage increases. Thus, retirement pay COLAs and

annual active duty pay raises will differ (Under Secretary of Defense, Personnel & Readiness, 2011).

### **3. REDUX (Military Retirement Reform Act of 1986)**

The REDUX program is applicable to service members who joined after August 1, 1986. The National Defense Authorization Act of 2000, however, gave individuals the option to choose between REDUX and High-3. One of the major elements of the REDUX plan is the disbursement of \$30,000 Career Status Bonus at the 15-year mark (Office of the Under Secretary of Defense, Personnel & Readiness, 2011). This obligates the individual to serve until the minimum retirement time of 20 years. The reason behind the implementation of the REDUX policy is that as individuals extend past 20 years, the percentage multiplier increases to 3.5 percent (USD [P&R], n.d.a). This mitigates the high attrition after the 20-year mark.

The REDUX and High-3 retired base pay plans are calculated in the same way, based on the average base pay of the highest three years of service. Additionally, the REDUX COLA is also targeted in the Military Retirement Reform Act (MRRA). If the percent determined above is greater than 1 percent, the COLA for REDUX retirements will be reduced by 1 percent (USD [P&R], n.d.b). If the percent determined above is 1 percent or less, the COLA for the REDUX retirement plan will be the same as all other retirement plans (USD [P&R], n.d.b). Table 1 provides a visual of the REDUX system:

<b>Years of Service</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>30</b>	<b>35</b>
<b>Final Pay</b>	50.0%	52.5%	55.0%	57.5%	60.0%	62.5%	75.0%	80.0%
<b>High-36</b>	50.0%	52.5%	55.0%	57.5%	60.0%	62.5%	75.0%	80.0%
<b>REDUX*</b>	40.0%	43.5%	47.0%	50.5%	54.0%	57.5%	75.0%	80.0%

Table 1. Chart Multiplier Comparison

## E. OFFICE OF THE SECRETARY OF DEFENSE TENTH QUADRENNIAL REVIEW OF MILITARY COMPENSATION POLICY

The goal of providing more flexibility for service members' careers was attempted in the tenth QMRC's new proposal for the current retirement system. The foundation for this proposal is the combination of the defined benefit and defined contribution plans. The next discussion dives deeper the plan's specifics and the components that constitute possible reform for the future.

### 1. Defined Benefit Plan

The defined benefit would provide qualified members with retirement pay equal to 2.5 percent of High-3 annual basic pay multiplied by the number of years of service. (USD[P&R], 2008). The plan would vest at 10 years of service, changing the current 20-year structure and allowing the force to be eligible for an earlier defined retirement benefit (USD[P&R], 2008). This benefit would be payable beginning at age 60 for those with less than 20 years of service and for those at age 57 with 20 or more years of service. If a service member served a minimum of 20 years, that member could receive an annuity upon separation of the military, but five percentage points will reduce payments for each year the member is short of age 57 (USD[P&R], 2008).

## **2. Defined Contribution Plan**

(USD[P&R], 2008) reported under the defined contribution plan, the designated branch would annually contribute up to 5 percent of annual basic pay into a retirement account for each service member. The plan would vest at 10 years of service and begin paying out at age 60. Contribution rates will vary based on years of service, with a maximum rate of 5 percent for those members with five or more years of service. The breakdown is as follows: the contribution rate would equal zero percent of annual basic pay for those with less than a year of service; 2 percent for members with up to two years of service; 3 percent for those with more than two but less than four years of service; 4 percent for personnel with four but less than five years of service; and 5 percent for those with five or more years of service (USD[P&R], 2008).

## **3. Gate Pay**

Gate pays are compensations paid to members who reach specified years-of-service milestones during their career progressions. Calculations are based off of basic pay, and these payments would be made regardless of whether a member remains in service after reaching the specified year of service necessary to qualify for the pay. Each Service has different times and amounts allocated for their respective service members (USD[P&R], 2008).

## **4. Separation Pay**

This pay would equal monthly basic pay multiplied by years of service and a multiplier. This would be provided to qualifying members when they leave the military. The concept is to ease the transition from the military and, hopefully, provide a buffer for the possibility of unemployment (USD[P&R], 2008).

## **F. SUMMARY**

Maturation of the current retirement system had a metamorphic impact and it is now used as a tool to retain vital personnel, control the size of the force, and to provide fiscal stability for retired personnel. With the economic downfalls that have hit our economy, service members are deciding to stay in longer, which increases the Military

Retirement Fund (MRF) liability (Defense Business Board Task Group, 2011, p. 27). This, combined with the increase of life expectancy from early 60s to roughly the early 80s, is another aspect causing cost growth in the DOD retirement liability. The current system was designed in an era when life spans were shorter, second careers were less common, and skills were not as easily transferrable to private sector opportunities.

With growing national debt and increased deficit spending by the federal government, the DOD has received high criticism regarding the current military retirement system. In 2013, defense spending was four percent of GDP and is predicted to head towards a downward trend (Boccia, Fraser, & Goff, 2013). With 2013 GDP at 15684.8 (billions), four percent is a significant number (Trending Economics, n.d.). With approximately 83 percent of the service members not reaching 20 years, leaving that group with no retirement options is unfair (Defense Business Board Task Group, 2011, p. 26). With financial constraints expected to be our future way of life, change is inevitable. This thesis will explore how variations in YOS and rank effect the retirement compensation of our service members.

### **III. MODEL DESCRIPTION**

This model simulated the potential income for an active-duty male military officer based on the Tenth QRMC proposal. The primary focus is both on the annuity and separation pay aspects. Annuity fluctuated based on two aspects: YOS and career progression (rank). The model used the data from the 2014 military pay chart to accurately predict annuity received by military officer at the age of 57 based on rank and YOS.

The base case scenarios chosen calculated the PV for all possible annuity disbursements and separation pay. The focus was from 57 years old to the expected year of death. All the data for annuity payments were based on the DOD Office of the Actuary Statistical Report on the Military Retirement System Fiscal Year 2013.

#### **A. MILITARY PAY CHART**

In Table 2, the Defense Financial and Accounting Service (DFAS) provided, in accordance with rank and YOS, the salary database of the 2014 per-month salaries. The light blue section ranging from 18–25 represents the numbers of years a service member served. The light grey sections depict the grade and rank of the officers. For example, an O-7 with 25 YOS would collect \$12,043.80 each month while on active duty. Modifications to the categories were made to show each year of service instead of the standard two-year interval. Because the primary focus of this model is within the ranks of O-5 to O-10, the blacked out portions represent options that are not applicable.

Cumulative Years of Service	Grade	18	19	20	21	22	23	24	25
O-10 <sup>1</sup>				16072.2	16072.2	16150.5	16150.5	16486.8	16486.8
O-9 <sup>1</sup>				14056.8	14056.8	14259.9	14259.9	14552.1	14552.1
O-8 <sup>1</sup>		12827.1	12827.1	13319.1	13319.1	13647.3	13647.3	13647.3	13647.3
O-7 <sup>1</sup>		12043.8	12043.8	12043.8	12043.8	12043.8	12043.8	12043.8	12043.8
O-6 <sup>2</sup>		9180.3	9180.3	9625.2	9625.2	9878.4	9878.4	10134.6	10134.6
O-5		8199.3	8199.3	8422.2	8422.2	8675.7	8675.7	8675.7	8675.7
O-4		7356.6		7356.6		7356.6		7356.6	
O-3		6302.4		6302.4		6302.4		6302.4	
O-2		4632.3		4632.3		4632.3		4632.3	
O-1		3655.5		3655.5		3655.5		3655.5	
O-3 <sup>3</sup>		6726		6726		6726		6726	
O-2 <sup>3</sup>		5364.3		5364.3		5364.3		5364.3	
O-1 <sup>3</sup>		4538.7		4538.7		4538.7		4538.7	

Table 2. Pay Chart (from Defense Finance and Accounting Service, n.d.)

## B. HIGH-3 PAYOUT TABLE

The data collected from the DFAS monthly salaries' information were used as a base to construct possible payouts of annuity. In Table 3, each designated YOS and rank category took the average of the prior two years monthly salaries and the current year monthly salary and then multiplied by 12 to establish a yearly salary. The total was then divided by three to calculate the annual average for the three years. Lastly, the cumulative multiplier was used in the multiplication of the High-3 annual annuity to help calculate the percentage disbursed to service members. For example, in Table 3 the rank of an O-6 at 22 YOS would collect \$64,083.36 in annual annuity payments. The cumulative multiplier was based on the traditional 2.5 percent for every year of service. This information was then placed in its respective year to represent the possible payouts at a certain YOS and rank. Information on estimated age of retirement and estimated life expectancy based on DOD actuary statistics was added. This information was used as a base to establish annuity length and age of service member at the time of retirement. It also allowed the determination of payments based on the current policy.

Years Of Service					
Rank	20	21	22	23	24
O-10	\$-	\$-	\$106,248.78	\$111,258.36	\$117,090.72
O-09	\$-	\$-	\$93,221.70	\$97,926.18	\$103,372.56
O-08	\$77,946.60	\$82,877.13	\$88,628.10	\$93,411.51	\$98,260.56
O-07	\$72,262.80	\$75,875.94	\$79,489.08	\$83,102.22	\$86,715.36
O-6	\$55,971.60	\$59,704.47	\$64,083.36	\$67,578.60	\$71,739.36
O-5	\$49,641.60	\$52,591.77	\$56,144.22	\$59,279.28	\$62,465.04

% Retirement	50%	53%	55%	58%	60%
--------------	-----	-----	-----	-----	-----

Age at Retirement					
Officer	43	44	45	46	47

Life Expectancy					
Officer	40.8	39.8	38.9	38	37.1

Retirement Parameters	
Salary:High Yrs	3
Benefit Multiplier for YOS	2.50%

Table 3. High-3 Payout Table

### C. OUTPUT INFORMATION

In respect to the output information, the DOD Office of the Actuary Statistical Report on retiree by rank and YOS were used to make an educated assumption on the possible YOS and rank correlation. Table 4 helps exhibit this on a visual level, displaying what an O-6 would mostly like be making at 21 YOS, collecting \$59,704.47 in annual annuity payments. Based on time in service and rank, some YOS were not applicable. For example, O-5 and O-6 possible payout ceases at YOS 28 and 30, respectively. This is due to higher tenure. Further, the ranks from O-7 to O-10 continued to 35 YOS. The earliest a service member retired in his respective rank established a premise for the first possible promotion in a respective rank.

<b>Rank</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
<b>O–5</b>	\$49,641.60	\$52,591.77	\$56,144.22	\$59,279.28	\$62,465.04	\$65,067.75
<b>O–6</b>		\$59,704.47	\$64,083.36	\$67,578.60	\$71,739.36	\$75,369.00
<b>O–7</b>						
<b>O–8</b>						
<b>O–9</b>						
<b>O–10</b>						

Table 4. High-3 Applicable Payout Table

#### D. EXPECTED ANNUITY

Table 5 takes the estimated YOS and rank, pulls the applicable information from the High-3 YOS chart, and outputs the possible annuity payments. Thirty YOS as an officer at the rank of O–6 would make \$96,324.30 in annual annuity payments for 27 years, clearing \$765,060.91 before taxes at a 12 percent discount rate. Being able to gather this data allows for researchers to account for variations in service member promotions based on their YOS. It also allows the researcher the ability to explore a multitude of payout possibilities based on the Tenth QMRC proposal.

<b>Year Of Service</b>	<b>Rank</b>	<b>Expected Annuity Payment</b>	<b>Expected Years of Annuity Payments</b>	<b>Present Value (Before Taxes)</b>	<b>Present Value (After Taxes)</b>	<b>Discount Rate</b>
<b>30</b>	<b>O–6</b>	<b>\$96,324.30</b>	<b>27</b>	<b>\$765,060.91</b>	<b>\$550,843.85</b>	<b>12%</b>

Table 5. Expected Annuity Table

#### E. PRESENT VALUE

The model then took the expected years of annuity based on year one and calculated the present value. Present values are all based on a 12 percent discount rate. Since annuities will begin at age 57 to expected years until death, this was the basis for the number of annuity payments. Inflation and taxes were calculated to allow for more analysis, but they were not included when calculating present values for each rank. Table 6 shows an example of applicable information used to calculate PV.

For aesthetic reasons, Table 7 consolidates the information listed in Table 6. The divisions are based on a static rank. This allows multiple rank structures and provides the ability to compare different ranks. Table 7 has a YOS section with a pull down option to calculate variations in YOS. It will also allow variations in PV.

<b>O-5</b>	<b>20</b>
<b>Age</b>	<b>43</b>
<b>Annuity Age</b>	<b>43</b>
<b>Years of Annuity (57 Yrs)</b>	<b>41</b>
<b>Discount Rate</b>	<b>12%</b>

Table 6. Present Value Table

<b>Rank</b>	<b>O-6</b>
<b>YOS</b>	<b>30</b>
<b>PV</b>	<b>\$765,060.91</b>

Table 7. Consolidated Output

## F. ASSUMPTIONS

Several assumptions made in construction of this model were discussed briefly throughout this chapter. In this section, all assumptions will be consolidated and addressed to enhance clarity. First, the discount rate of 12 percent was chosen based on aggregated findings. There were also assumptions made on the combinations of the most likely YOS and rank based on information given in respect of YOS and retirement. By looking at the highest numbers of retirees in a YOS and rank category, the assumption that a majority of service members reach that specific combination was deduced. Another major assumption was that all service members will live out their lives to their expected years of death (based on DOD's Office of the Actuary Statistical Report on the military retirement system estimates). This allowed for a standardized annuity formulation.

Annuity at age 57 was based on the OSD proposal that service members will receive annuities at the age of 57 after 20 YOS. Table 5 exhibits the possible options for High-3 possible payouts. The assumption was made that YOS and rank for newly retired service members would correlate with the rank of service members at a particular YOS and rank. Lastly, as mentioned earlier in Chapter I, there was a basic assumption that the officers commissioning age is 23 years old.

## IV. ANALYSIS AND RESULTS

### A. INTRODUCTION

This chapter provides an analysis and evaluation to ascertain if service members financially benefit or come up short with the implementation of OSD's proposal. There also is an underlying assessment of any significant correlation between retention and the incentives the proposal offers. The results were determined through the analysis of present value possibilities in various simulated occurrences in accordance with OSD's proposal.

### B. OSD VERSUS HIGH-3 (CURRENT)

Table 8 exhibits OSD's proposal for an O-5 with 20 YOS. Assuming service members are commissioned at 23 years old, the person is now 43 at age of retirement. Next is age 57, which is the applicable age for annuity payments. Based on the statistical report on the military retirement system (DOD Office of the Actuary, May 1, 2013), a service member at 43 years old has 27 years of annuity payments before estimated death. The average range for discount rates was between 10–15 percent (a 12 percent discount rate was used as the base case).

<b>0-5</b>	<b>20</b>
<b>Age</b>	<b>43</b>
<b>Annuity Age</b>	<b>57</b>
<b>Years of Annuity (57 Yrs)</b>	<b>27</b>
<b>Discount Rate</b>	<b>12%</b>

Table 8. Present Value Inputs (OSD)

Table 9 shows the annual income during the first year. The income was extrapolated from the High-3 payout chart for annuity payouts based on rank and YOS. A common scenario of a retired O-5 at 20 YOS was analyzed to ascertain if OSD's proposal provides financial gain for service members. Table 10 used the same format for

PV inputs as Table 8. Due to earlier age qualifications in the current retirement system, the only difference is that annuities increased.

Annuity Years	Annual Income
1	\$49,641.60

Table 9. Annual Income

<b>O-5</b>	<b>20</b>
<b>Age</b>	<b>43</b>
<b>Annuity Age</b>	<b>43</b>
<b>Years of Annuity (57 Yrs)</b>	<b>41</b>
<b>Discount Rate</b>	<b>12%</b>

Table 10. Present Value Inputs (Current)

Table 11 outputs show the PV both under OSD's proposal and under the current retirement policy. In implementing OSD's proposal, the PV for an O-5 at 20 YOS was approximately \$394,281.06. This compares with \$409,710.59 under the current retirement system. The OSD proposal adds separation pay to offset the loss in income by receiving annuities at a later age in life.

Retirement System	Present Value
High-3 (Current)	\$409,710.59
OSD Proposal	\$394,281.06
<b>Difference</b>	<b>\$15,429.53</b>

Table 11. PV Comparison, O-5 at 20 YOS

Figure 2 gives a snapshot of the formula created by OSD to calculate the one-time lump sum separation pay. Calculating separation pay in addition to annuity changes the dynamics of who is better or worse off financially. Evaluating the monetary difference in the case scenario of an O-5 at 20 YOS, per Table 11, the loss in annuity under OSD's

new proposal is \$(15,429.53). Compare this to the separation pay of an O-5 at 20 YOS at \$24,820.80. With the OSD's new proposal, there is a loss of \$(9,391.27). The separation pay is calculated by multiplying the annuity of \$49,641.60 by the 20 YOS and the 2.5 percent multiplier calculated separation pay. The service member receives an additional \$9,391.27.

$$\text{Separation Pay} = \text{Expected Annuity} * \text{YOS} * \text{Multiplier}$$

Figure 2. Separation Pay Formula

### C. PROPOSAL COMPARISONS

The High-3 offers higher annuity payments. Thus, it initially looks like a better option compared to OSD's proposal. Again, time-value of money plays a huge role in understanding the best option available. Based on rank and YOS, Table 12 compares the PV of OSD's proposal with the current retirement system. For example, the table takes the rank of an O-5 with 20 YOS and calculates the PV for the OSD's proposal and the current system. Next, it takes the difference of the two, which is \$(15,429.53), and adds the assigned separation pay from the OSD proposal for a net gain of \$9,391.27. The YOS in the table are based on the DOD Office of the Actuary Statistical Report on retiree by rank and YOS. The concept was that the YOS with the most retirees would be the most common rank at that YOS. Lastly, the table looked at the break-even discount rate that would allow the OSD proposal to equal the current High-3 retirement policy. To equal the High-3 PV of an O-5 at 20 YOS, OSD's proposal needed a discount rate of 11.471%, only requiring a slight variation in the discount rate. The difference in discount rates diminished as YOS increased, until 12% provided the same value in the current High-3 retirement policy as it did under OSD's proposal.

Rank	YOS	OSD (PV)	High-Three (PV)	Difference between OSD & High-Three	Separation Pay (OSD)	Total Difference of OSD & High-Three	Break Even Discount Rate
O-5	20	\$394,281.06	\$409,710.59	\$(15,429.53)	\$24,820.80	\$9,391.27	11.471%
O-6	30	\$765,060.91	\$778,780.59	\$(13,719.68)	\$72,243.23	\$58,523.54	11.753%
O-7	31	\$910,887.70	\$918,960.36	\$(8,072.66)	\$88,414.40	\$80,341.75	11.879%
O-8	33	\$1,105,771.49	\$1,110,948.74	\$(5,177.25)	\$114,255.16	\$109,077.91	11.936%
O-9	34	\$1,309,540.51	\$1,309,540.51	\$0	\$139,410.13	\$139,410.13	12%
O-10	34	\$1,484,174.69	\$1,484,174.69	\$0	\$158,001.21	\$158,001.21	12%

Table 12. Comparison Chart of OSD and Current Retirement System

Based on the first scenario of an O-5 at 20 YOS, OSD's proposal is more favorable. This proposal continues to increase in favorability because of a smaller time-lapse between retirement and annuity age. With less time between retirement and the annuity payment under the OSD proposal, the PV difference between the two policies decreases. Separation pay, however, increases as service members' YOS and ranks progress. This provides service members with a higher overall payout under the OSD proposal relative to the current system, i.e., this gives service members a significant lump sum up front. Separation pay, combined with closing the annuity time gap, allows OSD to provide a more valuable option to retiring service members as rank and YOS increase.

#### D. SAME RANK WITH DIFFERENT YOS

Table 13 illustrates the results of the PV analysis for the OSD proposal with similar ranks but different YOS. For example, the table takes the rank of an O-6 and compares PV in at 25 and 30 YOS. Thus, the present values equal \$598,622.31 and \$765,060.91, respectively. Generally, as rank increases in the comparisons, there was also an increase in financial loss between the different YOS. The highest two ranks were limited to applicable time-in-service. As rank increased, the financial disparity was not as large.

PV DIFFERENCE			
O-5			
YOS	20	25	
PV	\$394,281.06	\$516,804.09	<b>\$(122,523.03)</b>
O-6			
YOS	25	30	
PV	\$598,622.31	\$765,060.91	<b>\$(166,438.59)</b>
O-7			
YOS	27	32	
PV	\$781,583.17	\$946,456.87	<b>\$(164,873.70)</b>
O-8			
YOS	29	34	
PV	\$948,002.57	\$1,148,767.61	<b>\$(200,765.04)</b>
O-9			
YOS	32	35	
PV	\$1,212,303.65	\$1,370,155.69	<b>\$(157,852.04)</b>
O-10			
YOS	34	35	
PV	\$1,484,174.69	\$1,552,860.44	<b>\$(68,685.76)</b>

Table 13. Difference in YOS Compared to Similar Rank

#### E. DIFFERENT RANKS WITH SAME YOS

The comparison of different ranks with the same YOS drove the question of whether there is financial incentive to strive to achieve a higher rank. Or should a service member be content at the same pay grade upon retirement? At the 34/35 YOS mark, high-income disparities resulted because of the high amount of base pay service members received. At this stage in the evaluation and analysis, the only applicable ranks were O-7 through O-10. These ranks produced the highest yearly payments in the U.S. military pay structure. Table 14 shows the PV of the OSD retirement plan for the two different ranks, O-7 and O-8 (\$1,005,610.42 and \$1,148,767.61, respectively). This resulted in a difference in PV of \$(143,157.19) or 14 percent.

<b>Rank</b>	<b>34 YOS</b>
O-7	\$1,005,610.42
O-8	\$1,148,767.61
Percent Difference	14%
PV Difference	\$(143,157.19)

Table 14. Rank difference with 34 YOS (OSD)

Analysis revealed an anomaly. This was discovered when comparing an O-5 and an O-6. Excluding YOS 34/35, the largest percentage disparity in annuity between single rank separations was O-5 and O-6. Table 15 is set up in the same format as Table 14 and shows the PV difference of an O-5 and an O-6 after 28 YOS under OSD's proposal and the percentage difference. At 28 YOS, an O-5 is considered high tenure and will be forced to retire. An O-6 at 28 YOS still has another two years before reaching high tenure status. Comparing a terminal O-5 to an O-6 with the opportunity to continue with career progression, how strong is the career and financial incentive to make O-6?

<b>Rank</b>	<b>28 YOS</b>
O-5	\$578,820.58
O-6	\$709,339.92
Percent	22.5%
PV Difference	\$(130,519.35)

Table 15. Rank difference with 28 YOS

The PV for an O-5 at 28 YOS is estimated at \$578,820.58, while the PV for an O-6 is estimated at \$709,339.92. This is a difference of \$(130,519.35) or a 22.5 percent loss. The loss of income difference is not seen again until 33 YOS. Comparing an O-7 and an O-8 at 33 YOS, the possible lost annuity is \$(129,737.85) or a 13 percent loss of income. All other comparisons held constant percentage differences of about 13–16 percent loss of income, except for year 28 for an O-5 and an O-6. The size of financial loss and the lower present value of annuity drastically impacts service members at the 28-YOS mark.

## F. INCENTIVES FOR LONGER COMMISSIONS

Table 16 explores the opportunity cost of an O-6 retiring prior to the next available YOS. The table indicates the two YOS being compared (e.g., 21 YOS and 22 YOS), calculates the monetary difference between the two OSD retirement plan PVs, and follows with the percentage difference based on the earlier year. For example, an O-6 retiring after 23 YOS would receive \$(33,047.06) less than if retiring after 24 YOS. This is 6 percent less than continuing military service for another year. This table closely mirrors percentages in the other ranks as well and implies that service members receive a small percentage increase in retirement benefits (~5 percent/year) for longer military service if they remain at the same rank. The percentage incentive does not put much emphasis on prolonged career enhancement without the prospect for promotion. This raises the question whether this is the message we want to send our troops in the wake of the forward transition to a smaller, more capable force.

O-6		
YOS	Monetary Difference of PV between YOS	Percentage Difference of PV for the Two Years
21/22	\$(34,779.57)	
22/23	\$(27,761.13)	-5%
23/24	\$(33,047.06)	-6%
24/25	\$(28,828.61)	-5%
25/26	\$(39,507.21)	-7%
26/27	\$(35,210.13)	-6%
27/28	\$(36,000.26)	-5%
28/29	\$(25,333.57)	-4%
29/30	\$(30,387.42)	-4%

Table 16. Percentage Changes in Opportunity Cost

## G. SUMMARY

Within this chapter, PV is used to analyze the financial impact on service members comparing OSD's proposal and the current retirement system. The first analysis addressed which option provides the most value for service members. It may not be

obvious, but service members receive greater value under OSD's proposal. Applying the concept of the time-value of money, service members receive greater monetary value with the combined annuity payments and separation pay under the OSD proposal than they do with the more generous annuity payments in the current system.

The analysis then addressed the financial significance between service members with the same rank and different YOS. Analysis showed a simple pattern: as YOS increases, there is an increase in the financial difference. When analyzing different ranks with similar YOS, findings show reaching mandatory retirement as an O-5 at 28 YOS, versus retiring as an O-6 at 28 YOS, generated the most significant financial difference. The analysis then looked at possible incentives to continue military service while maintaining the same rank. The PV of the OSD retirement plan for an O-6 increased by four to seven percent per year for additional YOS. The annual increase is similar for other officer ranks. As would be expected, the PV of the OSD retirement proposal increases with YOS. It does not, however, provide a strong retention incentive for a force with service members exceeding 20 YOS—unless they anticipate further promotions. This raises the question for future consideration: What are the military future retention preferences and how does the retirement policy support them?

## **V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

### **A. SUMMARY**

This study was undertaken to analyze if OSD's proposal would provide more value for service members than the current retirement system. With the increase of government spending and discretionary spending suffering heavy cuts, exploring spending has become an important topic. The single highest element of discretionary spending is the military budget.

To be able to move toward a new future retirement policy, the concept of military compensation was addressed. One cannot change the current retirement policy without understanding how compensation is structured and the components it includes. Beyond the elements of compensation, it is important to have a deeper understanding of what incentive compensation provides to service members. After compensation was addressed, the report described the history of retirement reform. Reviewing major reform initiatives led to discovering what created the impetus for our current retirement system.

Lastly, understanding the current retirement system is a necessity before looking at changing the policy. Gathering the correct information on what the current system offers and the different options under the current retirement plan allows for a better assessment of the value provided. Three retirement options, final pay, REDUX, and High-3, were examined. Each provided a different type of retirement compensation for service members. Understanding these packages provided a holistic approach when conducting comparisons. An OSD retirement reform proposal was then presented and analysis was provided to compare its proposed value to the current retirement system. Understanding each component of the OSD proposal allowed for an accurate assessment on whether or not it offered more value than the current retirement system.

### **B. CONCLUSION**

The analysis of the PV of both the current and OSD proposed retirement compensation systems for an O-5 officer, showed that OSD's proposal would offer a more delayed annuity stream than the current High-3 policy, but it would compensate

with a one-time lump-sum separation bonus on retirement (at 20 or more YOS). OSD's proposal provided more value for the service member. OSD's proposal provided a net gain in PV of \$9,391.27 over the current retirement system. With the separation pay increasing with YOS and the annuity streams becoming more equal, the differential between the proposed OSD and current retirement systems greatly increased with YOS.

The next step was to see whether OSD provided more value for each rank and YOS—not just an O-5 at 20 YOS. Analysis revealed that the OSD proposal dominates the current system at each rank, providing a higher present value to the service member than the current system. The annuity disparities lessen as retirement age gets closer to OSD's annuity age. With separation pay increasing with YOS, each rank was provided a greater monetary value than the previous.

The final focus was on different ranks with the same YOS. Analysis discovered an anomaly at 28 YOS between an O-5 and an O-6: the monetary disparity between an O-5 and O-6 at 28 YOS was the largest until this was compared to ranks of O-7 and O-8 at 34 YOS. Is this financial boost for an O-6 at 28 YOS part of a retention plan, or is there a detrimental issue in how payouts are structured? There were limited incentives for service members to extend their career paths if they remained at their same ranks. Understanding what we are providing service members should help drive how our retirement policies are chosen.

## C. RECOMMENDATIONS

Studying incentives within the military retirement program is important. A major concern about OSD's proposal is that, with longer time in service, less money is distributed. Separation pay needs to be carefully considered to understand the incentives provided to service members considering retiring. As OSD's proposal is structured, both the separation bonus and the PV of the annuity payments increase with time in service. The incentives the military offers for YOS should reflect the current preference for the structure of the military.

## LIST OF REFERENCES

Boccia, R., Fraser, A. A. & Goff, E. (2013). Federal spending by the numbers, 2013: Government spending trends in graphics, tables, and key points. Retrieved from The Heritage Foundation website:  
<http://www.heritage.org/research/reports/2013/08/federal-spending-by-the-numbers-2013>

Christian, J. (2006). An overview of past proposals for military retirement reform. Santa Monica, CA: RAND. Retrieved from  
[http://www.rand.org/pubs/technical\\_reports/TR376.html](http://www.rand.org/pubs/technical_reports/TR376.html))

Congressional Budget Office. (2012, November). Costs of military pay and benefits in the Defense budget. Washington, DC: Author. Retrieved from  
[http://www.cbo.gov/sites/default/files/cbofiles/attachments/11-14-12-MilitaryComp\\_0.pdf](http://www.cbo.gov/sites/default/files/cbofiles/attachments/11-14-12-MilitaryComp_0.pdf)

Congressional Budget Office). (2013, November 7). Monthly budget review: Summary for fiscal year 2013. Retrieved from <http://.cbo.gov/publication/44716>

Defense Business Board Task Group. (2011). Modernizing the military retirement system. Washington, DC: Author.

Defense Financing and Accounting Service. (n.d.). CSB/REDUX. Retrieved from  
<http://www.dfas.mil/retiredmilitary/plan/estimate/csredux.html>

Glasson, W. H. (1900). History of military pension legislation in the United States. New York: Columbia University.

Hosek, J., Asch, B. J., & Mattock, M. G. (2012). Should the increase in military pay be slowed? Santa Monica, CA: RAND. Retrieved from  
[http://www.rand.org/pubs/technical\\_reports/TR1185.html](http://www.rand.org/pubs/technical_reports/TR1185.html)

Korb, L. J., Rothman, A. & Hoffman, M. (2012, May). Reforming Military Compensation. Washington, DC: Center for American Progress. Retrieved from  
[http://cdn.americanprogress.org/wp-content/uploads/issues/2012/05/pdf/military\\_compensation.pdf](http://cdn.americanprogress.org/wp-content/uploads/issues/2012/05/pdf/military_compensation.pdf)

Office of the Under Secretary of Defense, Personnel & Readiness). (n.d.a). Military compensation: Retired pay military. Retrieved from  
<http://militarypay.defense.gov/Retirement/>

Office of the Under Secretary of Defense, Personnel & Readiness). (n.d.b). Military compensation: Retirement cost of living adjustments (COLA). Retrieved from  
<http://militarypay.defense.gov/RETIREMENT/COLA/>

Office of the Under Secretary of Defense, Personnel and Readiness). (2008, July). Report of the Tenth Quadrennial Review of military compensation: Deferred and noncash compensation. Washington, DC: Author.

Trading Economics. (n.d.). United States GDP. Retrieved from  
<http://www.tradingeconomics.com/united-states/gdp>

United States. Advisory Commission on Service Pay. (1948, December). Career compensation for the uniformed forces. Washington, DC: Government Printing Office.

United States Department of Veterans Affairs. (n.d.). About VA. Retrieved from  
[http://www.va.gov/about\\_va/vahistory.asp](http://www.va.gov/about_va/vahistory.asp)

## **INITIAL DISTRIBUTION LIST**

1. Defense Technical Information Center  
Ft. Belvoir, Virginia
2. Dudley Knox Library  
Naval Postgraduate School  
Monterey, California